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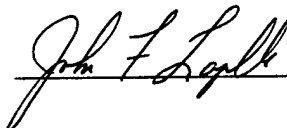
Rotors Or Turrets: The Dominant Maneuver Force for the Next Century

By

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A paper submitted to the faculty of the Naval War College in partial satisfaction of the requirements of the Joint Military Operations Department.

The contents of this paper reflect my personal views and are not necessarily endorsed by the Naval War College or the Department of the Navy.

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Abstract of

ROTORS OR TURRETS: THE DOMINANT MANEUVER FORCE FOR THE NEXT
CENTURY

Using Joint Vision 2010s' tenet of Dominant Maneuver as a framework for identifying what qualities the future land maneuver force should have, the attack helicopter appears as a more capable platform to achieve Dominant Maneuver. The current shift in strategic concepts--from forward-deployed to overseas presence and force projection--coupled with the increased use of military forces for Operations Other Than War and the two MTW strategy means that future forces must be more strategically deployable and operationally maneuverable.

In light of downsizing and the increased emphasis on systems capable of inflicting massive damage to armored forces, the tanks' utility on the future battlefield will be limited. Advances in helicopter capabilities give the future operational commander a more versatile tool for warfighting and a prime candidate for achieving dominant maneuver.

Further study of this subject is necessary. From a maneuver standpoint, the helicopter appears to be a logical progression. Fiscal and force structure constraints, and a host of other issues will bear on an informed decision of this subject.

I.

INTRODUCTION

Looking back over history and reviewing the progression of supporting to supported relationships of the centerpiece organizations in land warfare, one sees that wherever a fundamental change in maneuver capability occurred, there was a corresponding change in focus as to which combat arm was the centerpiece for land warfare. Early in this century infantry was the centerpiece. Even with the introduction of tanks during the First World War, change was slow and the infantry remained the centerpiece; tanks played a supporting role. The Second World War, and an increase in the maneuver capability of the tank caused a shift to armor as the dominant maneuver piece for land warfare; the infantry assumed the supporting role. The introduction of the helicopter following the Second World War increased the tempo of land operations. This new technology, however, remained a support element for infantry and armor forces.

If the Armed Forces are to embrace the new operational concepts of Joint Vision 2010 (JV2010)**--dominant maneuver, precision engagement, full-dimension protection, and focused logistics--and realize the potential warfighting gains inherent in these concepts, then it is time to "step outside the box" of traditional maneuver and embrace the technologies that best support them.

The previously mentioned shifts in focus have arguably been characterized as Revolutions in Military Affairs (RMAs). The ideas or fundamentals of an RMA include changes in doctrine, technology, and force structure.

Doctrinally, we are changing from a rigid, linear battlefield to a greater reliance on joint operations and a multi-dimensional, seamless battlespace. One of the cornerstone tenets of JV 2010 is the ability

** "JV 2010 is the conceptual template for how America's Armed Forces...achieve new levels of effectiveness in joint warfighting...through the application of new operational concepts...and provides a common direction for our Services...within a joint framework of doctrine and programs as they prepare to meet an uncertain and challenging future."¹

to mass the effects of fires, rather than forces, through information superiority, rapid mobility, and precision engagement. Technology is advancing dramatically, significantly improving our ability to employ these ideas. Changes are less dramatic in force structure; specifically, which maneuver force will provide the main effort and which will act in a supporting role.

Helicopters, unconstrained in mobility by terrain, and (with future technological improvements) virtually unconstrained by weather, will provide the joint force commander the capability, to realize the full potential of decisive speed, and dictate the tempo to the enemy. Advanced helicopters have the potential to achieve dominant maneuver.

Helicopters provide not only increased speed in operational and tactical maneuver over tanks, but also in strategic mobility. Compared to tanks, helicopters, by airlift or self-deployment, can deploy to a theater of operations and more rapidly provide decisive firepower to the operational commander.

Current and future improvements in antitank (AT) technologies (listed in Chapter Four) will have a significant impact on the tank's ability to be decisive on the future battlefield. At the same time, technological advances in helicopter design are reducing their vulnerability to air defense systems.

This does not mean that the tank will be relegated to the graveyard. Armor's ability to hold ground, unlike the helicopter, and to provide sustained operations capabilities, will ensure its place as a necessary tool for future warfare. However, armor's dominance as the decisive maneuver arm in land warfare should change to one of support for the Army's new dominant maneuver platform, the helicopter.

II.

THE SHIFT IN STRATEGIC CONCEPTS

The Allied Cold War strategy, created a need for a large, forward-deployed, military presence to deter Soviet aggression. This was based upon the premise that U.S. forward-deployed forces would not only deter, but, should deterrence fail, also provide a credible defensive capability against a large-scale Soviet attack into Western Europe. Fundamental to this strategy was the assumption that the Allies could foresee the impending attack in time to react and deploy forces for the defense. This created a comfortable, although threatening strategic environment, because the enemy was predictable and a military doctrine and force structure could be designed to cope with it. The strategic concept of forward presence focused on a linear and relatively tightly structured battlefield. Forces were arrayed in a specific, set-piece fashion.²

The fall of the Soviet Union has radically changed the way the United States thinks about military operations in a strategic context. The threat today, and for the foreseeable future, is no longer so easily defined. The diversity of threats to U.S. national security, and the unpredictability of where the next conflict will emerge has changed the way we envision achieving our national military objectives. Since the threats to national security are now more geographically diverse, large, standing, forward-deployed U.S. forces are less viable, either politically or economically. Forces today must be more strategically and operationally flexible. Strategically, we have shifted from the concept of forward-deployed to the concepts of limited overseas presence and power projection. Operationally, services are shifting towards the tenets outlined in JV 2010.

One thing has not changed. The primary role of the U.S. Army is still to "fight and win our Nation's wars."³ Even though the threat today is diverse and less predictable, and the Warsaw Pact threat in Western Europe is gone, major threats to world stability still exist. The Iraqi invasion of Kuwait, and its current failure to comply with U.N. Resolutions, emphasized the continuing need for

a U.S. capability to respond to a large-scale land attack. It also ushered in a new force structure sizing strategy which posited two nearly simultaneous Major Theater Wars (MTWs).^{**} The rationale for this strategy was contained in the Bottom Up Review (BUR).⁴

It is no secret that the U.S. military, including the U.S. Army, is getting smaller, and that the range of missions and operations they must undertake has grown dramatically. The services can no longer carve out special niches, but must be capable of dealing with a greater number of contingencies spanning the entire spectrum of conflict. Additionally, what joint forces pursue at the tactical and operational levels of war will increasingly affect the attainment of our strategic objectives. The military must be in the technological vanguard in order to enhance military capabilities that leverage smaller forces. Forces must be properly balanced so that their synergy contributes towards achieving success in a given mission. "Joint Vision 2010 is the conceptual template for how America's Armed Forces will channel the vitality and innovation of our people and leverage technological opportunities to achieve new levels of effectiveness in joint warfighting."⁵ One of the key operational concepts in JV 2010 for achieving this new level of effectiveness is Dominant Maneuver.

^{**} The term Major Theater War (MTW) is synonymous with Major Regional Conflict (MRC). The 1996 Annual Defense Report uses the term Major Regional Conflict.

III.

DOMINANT MANEUVER

Maneuver, according to Draft FM 100-5, dated April 1997, is to "place the enemy in a position of disadvantage through the flexible application of combat power -- forces and effects -- to gain advantage."⁶ The manual expands this definition by incorporating the concentration and dispersal of combat power in space and time to put the enemy off balance and keep it there--by presenting problems or situations at a tempo with which it cannot handle. The result is freedom of action for friendly forces, reduced risk and a greater chance of success.⁷ This also appears to be the philosophy behind the Dominant Maneuver concept contained in JV 2010.

"Dominant Maneuver will be the multidimensional application of information, engagement, and mobility capabilities to position and employ widely dispersed joint air, land, sea and space forces to accomplish the assigned operational task."⁸ JV 2010 sees this as a combination of:

- asymmetric leverage
- positional advantage
- decisive speed and tempo
- decisive force

Each element must focus on the enemy's tactical, operational, and strategic centers of gravity.⁹ This concept provides a blueprint for a more agile, higher tempo, joint operation that tailors units to specific tasks and targets. Its goal is to achieve decisive results on the future battlefield through massed effects rather than massed forces.¹⁰

The overriding goal of JV 2010 is to create a battlespace more lethal to the enemy. Therefore, JV 2010 relies heavily on the need for future systems to have greater stealth, greater mobility, and the ability to operate rapidly from dispersed locations. These capabilities will allow the force to generate a higher operational tempo on the battlefield.¹¹

The National Military Strategy relies on land forces capable of rapid deployment and forcible entry. The goal is to quickly seize the initiative, and if necessary, destroy enemy forces rapidly through synchronized maneuver and precision fires. Operational and tactical freedom of maneuver, agility, and the capacity to dominate land battles are the requisite characteristics of the future land force.¹² The forces of the future must also have strategic mobility. The reduction in forward deployed forces means that to maintain a deterrent potential, and provide our national leadership with reaction time, maneuver space, and more options for crisis response, rapidly deployable forces are paramount.¹³ "Power projection is essential for performing the required tasks of all components of the strategy, however, it is most critical in the deterrence and conflict prevention and warfighting portions of our military strategy."¹⁴

The United States Army has added versatility to its tenets of operations in the 1993 version of FM 100-5. This addition stems from the realities of recent operations such as Just Cause, Desert Shield, and Desert Storm. Versatility means that forces must possess the capability to operate in a multifunctional environment, across the entire spectrum of conflict, and to achieve their objectives rapidly.¹⁵ In essence, future forces must be capable of achieving rapid dominance and quickly shifting focus to other tasks. JV 2010, the National Military Strategy, and Army Vision 2010 rely on future technology to provide platforms that will enable soldiers to achieve rapid dominance and maintain the ability to quickly redeploy to support other objectives. **

To better achieve versatility, increase operational and strategic mobility and assist forces in achieving rapid dominance, Army Vision 2010 repeatedly states the Army must "lighten up the heavy forces and heavy up the capabilities of the light forces."¹⁶ There has been extensive research and development aimed at "heavying up" the light forces in the form of improved antitank capability but virtually no foreseeable change towards "lightening up" the heavy forces. This means that the armor

** The phrase, Rapid Dominance, was coined by the National Defense University in its book "Shock and Awe: Achieving Rapid Dominance." Rapid Dominance affects the will and perception of an adversary; forcing them to conform to our strategic ends.

forces will continue to lack the strategic mobility necessary to meet tomorrow's challenges. On the other hand, the army unit equipped with advanced helicopters will find itself with increased strategic, operational and tactical mobility--making it a strong candidate for achieving Dominant Maneuver in future conflicts.

IV.

EMERGING ANTITANK CAPABILITIES

The Bottom Up Review (BUR) recommends a number of critical force enhancements designed to improve U.S. force capabilities, flexibility, and lethality.* Many of the improvements and technologies focus on destruction of armored forces. These new and emerging antitank (AT) technologies combine accuracy with limited visibility and adverse weather employment capability. Sensor Fused Weapons (SFW) provide forces with the capability to deliver wide area, inertial guided munitions on widely dispersed armor vehicles. Numerous systems, from mortars to the Army Tactical Missile System (ATACMS) and jet aircraft, can fire these weapons. Joint Direct Attack Munition (JDAM) is one example of SFW technology. It is scheduled to be operational by 2002. Many would argue that this technology will be prohibitively expensive for a future adversary to use against U.S. forces, but that argument is invalid. JDAM, has already been cleared for acquisition by more than eighteen countries. It is a relatively low cost (\$25,000 per copy) weapon that provides an asymmetric advantage against armor forces to potential future adversaries.¹⁷

Javelin, in operation now, provides the infantryman a fire-and-forget, antitank capability at ranges greater than 2000 meters.¹⁸ Line-of-Sight Antitank (LOSAT) missile is another example of AT technology designed to provide light forces with enhanced antitank capability. Intelligent minefields, precision guided mortar munitions, Brilliant Antiarmor Technology (BAT) submunitions, Sense and Destroy Armor submunitions (SADARM), as well as Enhanced Fiber Optic Guided Missiles (E-FOGM) are all advanced munitions technologies designed to increase lethality and survivability of soldiers against armor threats.** These systems, are not Buck Rogers fantasies. They are in

* For detailed information on Critical Force Enhancements, refer to the 1996 Annual Defense Report, Chapter 3.

** These systems are described in greater detail in the Army Green Book, Oct. 96, pp. 239 through 309, Oct. 97 version pp. 236-271, and the 1996 Annual Defense Report, Chapter 3, Critical Force Enhancements.

production or development now and have demonstrated their utility as a force enhancer. With all the technological advancements focused on military hardware and systems, surprisingly little has been done to provide armored forces with the capability to survive or combat the growing AT threat. The sense seems to be that if we make the tank crew more situationally aware, then they will be better capable of surviving on the battlefield. However, knowing where the enemy is and being able to get within range to engage him are not the same thing. The number of Memorandums of Agreement (MOAs) between the United States and foreign countries regarding development and acquisition of these systems means that U.S. forces in the future may face the advanced technology that we are currently developing.

V.

ARMOR CAPABILITIES AND LIMITATIONS

Armored forces have in the past brought a great deal of capability to the battlefield. As a land-based platform, they are the most mobile force on the ground. Their mobility has been the benchmark for supporting weapon systems design capability requirements.¹⁹ Armor mobility, however, is more tactical and operational; strategically, armor is unwieldy. Their limited ability to get to the fight promptly is a serious drawback to their utility on the future battlefield. Their long logistics tail further reduces their utility as an operation maneuver force.

Historically, armored forces have been extremely survivable in the close fight. Their heavy armor, chemical overpressure systems, and ability to bring devastating, highly accurate fires on an enemy at ranges of two to three thousand meters have made them the maneuver force of choice for close combat. They have also been capable of withstanding small arms fires, indirect fires, and light antitank fires. However, as the previous section discussed, armored forces' survivability is about to be seriously degraded. Furthermore, the current range capability of tank main guns will no longer be adequate to ensure it will dominate the battlefield. Emerging AT systems will be capable of outreaching the tank main gun by orders of magnitude. Despite the emerging threats to armor, it will continue to have a great deal of utility on the future battlefield. Even considering the JV 2010 concepts of how the future fight will occur--dispersion, concentration, redispersion, etc.--there will remain a need to seize and retain terrain; tanks, under most conditions, are well suited for this task. Additionally, the accuracy of their armament systems significantly reduces collateral damage on the battlefield. Tactically, they provide maneuver capability to the force; and against opponents who do not possess SFW type technologies, they offer a great deal of protection for their crews. In this type of conflict, the tank possesses durability in combat and the added benefit of psychological impact (it's hard to ignore a tank).²⁰ Arguably, the most critical capability the main battle tank brings to the

battlefield is a "twenty-four hour a day, all weather, continuous combat system that can fight under any conditions."²¹ This statement, of course, assumes that the tank is already on the battlefield.

Introducing heavy forces into a theater of operations requires existing infrastructure, ports and piers.

Tanks cannot bypass the shore and project power inland. Future adversaries will not allow the type of unopposed buildup time that Saddam Hussein did during the Gulf War. Those who believe that will be the case may find themselves standing on foreign soil with an enemy rolling down on them while their tanks are still on ships.

In order for a tank to occupy and hold ground it must get to the ground one wants occupied. If it cannot, the task will fall to the infantry. Tanks may be significantly more mobile than wheeled vehicles, but they are still terrain limited. They cannot rapidly breach obstacles, natural or man-made, such as significant water obstacles (rivers and wetlands), rugged mountainous terrain, dense jungles and forests, mine fields, wire, or ditches. Additionally, they are extremely vulnerable in urban terrain. So, even their tactical and operational mobility, when viewed in this light, appears significantly limited.²²

VI.

HELICOPTER CAPABILITIES AND LIMITATIONS

FM 100-5 describes Army aviation in the following manner. "The firepower, agility, and speed of Army aviation permit ground commanders to close with and defeat a wide range of enemy forces. Attack helicopters are ideally suited for rapid reaction in close, deep, and rear operations. They are also used where the terrain restricts or prohibits ground-force occupation."²³ FM 1-112, Attack Helicopter Operations, describes the attack helicopter's capabilities in terms of mobility, speed, range, versatility, and lethality. They can command the third dimension of the battlespace. By using the terrain to their advantage, as opposed to being restricted by it, attack helicopters provide the commander with a force capable of rapidly moving to the decisive place at the decisive time. Armor forces generally move at an unopposed rate of three minutes per kilometer. Attack helicopters can achieve rates of movement, opposed or unopposed, in excess of three kilometers per minute. For planning purposes, the attack helicopter is capable of influencing the battlefield at ranges of up to 150 kilometers without refueling. Additionally, the helicopter can provide attack capability to the force, as well as reconnaissance and target acquisition under day, night, and limited adverse weather. Heavy attack helicopters, are capable of carrying up to 16 Hellfire missiles, and can engage targets at ranges up to eight kilometers. Onboard video recorders and newer Video Image Cross Link (VIXL) can provide commanders with near-real-time and real-time intelligence on the battlefield.²⁴

From a limitation standpoint, planning time is a critical element for attack helicopter employment. Weather is equally as critical. Prior to some recent improvements in helicopter capabilities and weapon systems, extremely high winds, low ceilings (less than 500 feet), and low visibility (less than three kilometers) seriously hampered its ability to move and to employ weapon systems. Another limitation of attack helicopters is logistics. Helicopters consume large amounts of fuel and require constant maintenance. Furthermore, turn-around times after combat action can take as much as two

hours for a battalion using internal assets.²⁵ Helicopters are also vulnerable to air defense missiles and radar systems, as well as antiaircraft artillery guns and antihelicopter mines. Surprisingly though, very little has been done to improve the low altitude, short range air defense systems which is evident from the lack of emphasis in the Army Modernization Plan and Annual Defense Report.^{**}

Helicopters, like tanks, will continue to require significant logistics support. There is no way around the fact that turbine engines gulp fuel. The Army has embraced a number of initiatives to overcome some of the other limitations. Constraints imposed by weather have offered the most valid argument for not relying on helicopters when you need them. In the past, weather has significantly degraded a commander's ability to employ his helicopters, as well as the helicopter crew's ability to employ its weapon systems. The AH-64D Longbow Apache significantly reduces weather as a constraining factor. The fire control radar on this aircraft not only "detects, classifies, and prioritizes stationary and moving tracked, wheeled, air defense, rotary and fixed wing targets in clear or adverse weather, battlefield obscurants and low light,"²⁶ it also incorporates a Terrain Profile Mode to assist with navigation. Coupled with a Radio Frequency (RF) Hellfire missile, the Apache can now negotiate the battlefield and engage targets virtually unrestricted by weather. Additionally, the Hellfire is effective against armored vehicles as well as bunkers, ships and other helicopters. This also gives it capabilities as an asymmetric leverage force. Combining the RF Hellfire with the Longbow Fire Control Radar provides a crew with the capability to engage up to 16 targets in less than a minute. Recently at the National Training Center, two AH-64Ds destroyed an entire motorized rifle battalion in three and one half minutes.²⁷ This capability is moving into the production stage now; future developments should prove to be even more lethal.

The RAH-66 Comanche will incorporate AH-64D capabilities with some improvements. Currently, the availability rate for Army helicopters is running at approximately three and three-

^{**} This statement is not meant to infer that there are not improvements in air defense systems capabilities. However, the improvements in helicopter stealth technologies, unlike the lack of tank survivability improvement, are significantly reducing helicopter vulnerability to air defense systems.

quarter hours per day. The Comanche's design will provide 11 to 12 hours per day availability per airframe. This reduced maintenance requirement means more presence on the battlefield with fewer assets. To improve turnaround time after a mission, the RAH-66 will automatically transmit its fuel, ammunition, and maintenance requirements while en route. Turnaround for an aircraft is expected to be approximately 12 minutes.

The Comanche's stealth capability (one six-hundredth the radar cross section of an Apache and one-ninth the infrared signature of a Blackhawk), coupled with improved optics and radar will enhance its battlefield survivability. Reduced acoustic signatures will minimize its detection and vulnerability to antihelicopter mines. Comanche can also employ active radar and infrared defeating systems. Millimeter wave radars will allow the crew to detect targets at ranges more than 12 kilometers regardless of weather. Its ability to share information with and receive information from other assets on the battlefield, in real time, will significantly enhance overall situational awareness.

Along with the Comanche's tactical and operational mobility and firepower, it will also have strategic deployability. Comanche will fit into any current or planned future strategic lift aircraft (1 per C-130, 3 per C-141, 4 per C-17, and 8 per C-5), and be combat operational 20 minutes after arrival (as compared with one M1A2 per C-5). Lacking airlift availability, the Comanche can also self-deploy from CONUS to Europe in 24 hours or to Southwest Asia in 30 hours.²⁸

VII.

IMPLICATIONS FOR THE OPERATIONAL COMMANDER

What does it all mean to the operational commander? The operational commander's primary role is to ensure freedom of maneuver for his forces to achieve his objectives. "At the operational and strategic levels of war, freedom of action is primarily achieved by properly balancing the *operational factors of space, time, and forces*, and the combination of these."²⁹

Operational Art, like JV 2010, seeks to achieve objectives through the indirect approach, avoiding strengths and attacking weaknesses. The goal is to have a decisive impact on the enemy's Center of Gravity. By sequencing and synchronizing forces in space and time, the operational commander can achieve massed effects and near simultaneous attacks. The intent of this simultaneity is to get inside the enemy's decision cycle and generate or dictate circumstances to him at a rate in which he cannot deal with effectively. The force maintains the initiative and through this, freedom of action.

Army helicopters furnish the operational commander with a tool that allows him more options for synchronizing his forces across the battlespace at a rate which expands his decision time and reduces the enemy's ability to react. A helicopter's range, speed, and agility allow it to conduct multidimensional, seamless operations more readily than the tank. It can assist the commander in his pursuit of information superiority. The helicopter's current and future capabilities allow it to gather more information at a greater depth than the tank and share that information with all elements of the joint team. This generates the shared and improved situational awareness that JV 2010 relies on to dominate the battlespace. A helicopter's mobility, tactical and operational, and lack of terrain dependence, make it a more versatile asset to the operational commander. This allows him to disperse forces more readily for protection and yet quickly mass forces and effects to achieve the necessary destruction. Current trends make rapid strategic and operational response a necessity.

Helicopters provide the added benefit of strategic mobility to the operational commander. This capability gives him another tool to include in his list of flexible deterrent options.

Dominant Maneuver incorporates the need for increased speed and tempo of operations, information superiority, mobility, and the necessity to engage the enemy with decisive force. It further relies on the capability to assert leverage on an opponent while protecting friendly forces through stealth, maneuver and dispersion. Army helicopters possess all these capabilities and requirements. They are a decisive tool in achieving Dominant Maneuver and may become the Army's centerpiece force of the future.

VIII.

CONCLUSION AND RECOMMENDATION

JV 2010's tenets demand that we seriously look at new platforms to realize the potential inherent in these concepts. The time has come to "step outside the box" of traditional maneuver and embrace the technologies with the highest potential for success.

Doctrinally, the change to greater reliance on joint operations, on a multi-dimensional, seamless battlespace, and on the ability to mass the effects of fires, through information superiority, rapid mobility, and precision engagement means we must look for new tools to exploit this doctrine.

Helicopters, unconstrained in mobility by terrain and weather, will provide the joint force commander the capabilities to realize the full potential of decisive speed, and dictate the tempo to the enemy. Improvements in antitank technologies will significantly reduce the tank's ability to be decisive on the future battlefield. Armor's ability to hold ground and to conduct sustained operations will ensure its survival as a necessary tool for future warfare. However, the tank proponents need to act now to develop countermeasures to the proliferation of antitank weapon systems. Furthermore, without a greater ability to deploy strategically, tanks may soon become as useless as horse cavalry. The limited number of tank system upgrades presented in the Annual Defense Report and reported in the Army Modernization Plan indicates that the emphasis is no longer focused on significantly improving future armor capabilities.

Further study regarding helicopter utility as a dominant maneuver force is necessary. From a maneuver standpoint, the helicopter appears to be a logical progression. Fiscal and force structure constraints, institutional resistance, and a myriad of other issues will bear on an informed decision on this subject. These issues are beyond the scope of this paper.

From the standpoint of maneuver dominance, however, the role of the tank should become one of support for the Army's increasingly superior weapon of maneuver, the helicopter.

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